

locations. Specimens were considerably smaller than those recorded from areas further south; length means from the State Port bed ranged between 4.9 and 6.3 mm. This occurrence is an extension of the northern range of *I. striolatus* from Florida to North Carolina.

THE STROMBUS COSTATUS COMPLEX IN THE NEOGENE OF SOUTH FLORIDA. David Hargreave, College of General Studies, Western Michigan University, Kalamazoo.

Collections of material from the Pliocene and Pleistocene fossil beds of South Florida have uncovered four distinct members of the *Strombus* subgenus *Tricornis*, all apparently related to one another and to the extant species *Strombus costatus* (Gmelin). The oldest member is an as yet unnamed form from the Pinecrest Beds exposed in the vicinity of Sarasota. A second unnamed form, also tentatively assigned to the Pinecrest Beds, is presently known only from the Mule Pen Quarry northeast of Naples. The third form, *Strombus leidy* (Heilprin), is limited to the Caloosahatchee marls and was the first fossil member of the subgenus known from the New World. The youngest member of the group is *Strombus mayacensis* (Tucker & Wilson), which is limited to the early Pleistocene Bermont Beds. Traditionally, *Strombus leidy* has been thought to be the immediate ancestor of *Strombus costatus*, with some seeing the former as merely a tall-spired form of the latter. A study of shell morphology within the group demonstrates that these two species exhibit significant differences in overall shell size, body shape and many aspects of shell sculpture, but interestingly no statistically significant difference in their relative spire heights. *Strombus leidy* can be easily separated from all other members of the group on the basis of spire shape and various features associated with the area of posterior lip attachment. Likewise, the unnamed form from the Pinecrest Beds at Sarasota can be separated from all other members of the group on the basis of elements of sculpture of the body whorl together with the absence of lirations on the parietal wall below the point of lip attachment. In all other respects, it is the member of the group morphologically most similar to *Strombus costatus*. Further study of the group is indicated to determine the phylogenetic relationships among its members as well as their relationships to both fossil *Strombus* from the Gatunian Province and extant species in the Panamic Province.

RAPID MORPHOLOGICAL EVOLUTION IN A NEW ENGLAND PERIWINKLE SNAIL. Robin Hadlock Seeley, Department of Biology, Yale University, New Haven, Connecticut.

Proponents of the punctuated equilibrium theory in evolutionary biology maintain that natural selection has relatively little to do with episodes of rapid and significant morphological change in the fossil record, and that morphological evolution is concentrated in speciation events. Testing these hypotheses is difficult because episodes of rapid morphological change are rarely seen in living species, where the processes of natural selection can be observed and where morphological differences between taxa can be com-

pared to genetic differences between those taxa. One such episode, however, has occurred recently in an intertidal snail in Maine (USA). The shell morphology of *Littorina obtusata* (L.) has changed markedly during the last 100 years. Snails in the late 1800's had tall spires and thin shell walls. In contrast, snails in the late 1900's (in southern and mid-coastal Maine) have flat spires and thick shell walls.

This change in shell morphology evidently traces to increased predation by green crabs (*Carcinus maenas* (L.)), since flatter, thicker shells reduce a snail's vulnerability to crabs. One line of evidence for this is the strong correlation between snail shell morphology and abundance of green crabs in the 1980's: spire height decreases and shell thickness increases with increasing green crab abundance. A second and more direct line of evidence for the effect of crabs on snail shell morphology comes from field experiments. When snails of the two shell forms were tethered in the intertidal zone, flat snails survived longer than tall snails at sites where green crabs are abundant. At other sites where green crabs are rare, survival of flat and tall snails did not differ. Finally, electrophoretic analyses indicated that snails producing these different shell forms are members of one morphologically variable species. These data indicate that natural selection can produce a major morphological change over a short period of evolutionary time, and that significant morphological evolution can occur without speciation.

REVISION OF GENERA AND INDO-PACIFIC SPECIES IN THE FAMILY ARCHITECTONICIDAE. Rüdiger Bieler, Department of Invertebrate Zoology (Mollusks), National Museum of Natural History, Smithsonian Institution, Washington, D.C.

The Architectonicidae is a family of gastropods with a worldwide distribution in subtropical and tropical waters, known to feed on coelenterates. Approximately 50 generic names have been proposed for or used in this family. The Recent and fossil genera have been revised, based on a system of homologous sculptural elements of the teleoconch. Additional characters of size, shape, sculpture and coloration of teleo- and protoconchs, as well as anatomical, radular and opercular data support the proposed system. The Recent species (approximately 130 worldwide) can be grouped in the following generic and subgeneric taxa:

- Architectonica* (*Architectonica*) RÖDING, 1798
- Architectonica* (subgen. nov.) [in press]
- Philippia* (*Philippia*) J.E. GRAY, 1847
- Philippia* (*Psilaxis*) WOODRING, 1928
- Philippia* (*Basisulcata*) MELONE & TAVIANI, 1985
- Discotectonica* MARWICK, 1931
- Granosolarium* SACCO, 1892
- Solatisonax* IREDALE, 1931
- Pseudotorinia* SACCO, 1892
- Pseudomalaxis* (*Pseudomalaxis*) FISCHER, 1885
- Pseudomalaxis* (*Spirolaxis*) MONTEROSATO, 1913
- Heliacus* (*Heliacus*) ORBIGNY, 1842
- Heliacus* (*Torinista*) IREDALE, 1936